

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application

PATENT APPLICATION

Inventors: Bryers, et al.

Application No.: Unknown

Filed Date: December 21, 2001

Customer No.: 28554

Title: CROSS-BAR SWITCH
INCORPORATING A SINK PORT
WITH RETRY CAPABILITY

PRELIMINARY AMENDMENT

Box Patent Application
Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

Applicants respectfully request that the Examiner enter the following amendments to the above-identified patent application, which is a continuation of U.S. Patent Application Serial No. 09/900,514, assigned to Group Art Unit 2661.

AMENDMENTS

Please amend the application as follows:

In the Claims:

Please replace claims 1-38 with claims 39-62 as shown below. Applicants add new claims 39-62 and cancel claims 1-38. All pending claims are reproduced below.

39. (new) A cross-bar switch comprising:
a set of input ports to receive data packets;

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a set of sink ports in communication with said set of input ports to accept and forward said data packets, wherein a first sink port in said set of sink ports includes:

a communication link interface including a Retry input, wherein said first sink port is adapted to respond to a signal on said Retry input by performing the steps of:

aborting transmission of a first data packet;

waiting a predetermined period of time; and

transmitting said first data packet after waiting said predetermined period of time.

40. (new) The cross-bar switch of claim 39, wherein said Retry input is programmable to operate in a Hold-off mode, wherein said first sink port is adapted to respond to said signal on said Retry input when said Retry input is programmed to operate in said Hold-off mode by discontinuing transmission on said communications link interface after transmission of a data packet is complete, until said signal is altered.

41. (new) The cross-bar switch of claim 40, further including a Retry Mode register, wherein a value in said Retry Mode register controls an operating mode of said Retry input.

42. (new) The cross-bar switch of claim 39, further including a Retry Time register identifying said predetermined period of time.

43. (new) The cross-bar switch of claim 39, wherein each sink port in said set of sink ports a set of sink ports includes:

a respective communication link interface including a Retry input, wherein each said sink port is adapted to respond to a signal on said Retry input by performing the steps of:

aborting transmission of a third data packet;

waiting a predetermined period of time; and

transmitting said third data packet after waiting said predetermined period of time.

44. (new) The cross-bar switch of claim 39, further including:

a set of data rings in communication with said set of input ports and said set of sink ports.

45. (new) The cross-bar switch of claim 44, wherein said set of data rings couples each sink port in said set of sink ports to each input port in said set of input ports.

46. (new) The cross-bar switch of claim 45, wherein each sink port in said set of sink ports snoops data packets on each data ring in said set of data rings.

47. (new) The cross-bar switch of claim 46, wherein said first sink port is adapted to snoop data packets on each data ring in said set of data rings to determine whether said data packets are targeted to a destination supported by said first sink port.

48. (new) The cross-bar switch of claim 44, wherein said first sink port is adapted to snoop data packets on each data ring in said set of data rings and determine whether to accept said first data packet based on a set of criteria, wherein said set of criteria includes:

said first sink port having sufficient storage space for storing said first data packet,

said first sink port supporting a destination targeted by said first data packet, and

a total number of packets being received by said first sink port not exceeding a predetermined number of packets.

49. (new) The cross-bar switch of claim 44, wherein said first sink port includes:

a ring interface coupled to said set of data rings to receive data from data packets;

a storage buffer coupled to said ring interface to receive and store said data; and

an output port including said communications link interface, wherein said output port is coupled to said storage buffer to receive said data from said storage buffer and transmit said data on said communications link interface.

50. (new) A sink port adapted to accept and forward data packets, said sink port comprising:

a storage buffer; and

an output port including a communications link interface, wherein said output port is coupled to said storage buffer to receive data from said storage buffer and transmit said data on said communications link interface,

wherein said communications link interface includes a Retry input, wherein said output port is adapted to respond to a signal on said Retry input by performing the steps of:

aborting transmission of a first data packet;

waiting a predetermined period of time; and

transmitting said first data packet after waiting said predetermined period of time.

51. (new) The sink port of claim 50, wherein said Retry input is programmable to operate in a Hold-off mode, wherein said sink port is adapted to respond to said signal on said Retry input when said Retry input is programmed to operate in said Hold-off mode by discontinuing transmission on said communications link interface after transmission of a data packet is complete, until said signal is altered.

52. (new) The sink port of claim 51, further including a Retry Mode register, wherein a value in said Retry Mode register controls an operating mode of said Retry input.

53. (new) The sink port of claim 50, further including a Retry Time register identifying said predetermined period of time.

54. (new) The sink port of claim 50, wherein said sink port is adapted to snoop data packets in a set of data rings.

55. (new) The sink port of claim 54, wherein said sink port is adapted to snoop data packets on each data ring in said set of data rings to determine whether said data packets are targeted to a destination supported by said sink port.

56. (new) The sink port of claim 54, wherein said sink port is adapted to snoop data packets on each data ring in said set of data rings and determine whether to accept said first data packet based on a set of criteria, wherein said set of criteria includes:

said sink port having sufficient storage space for storing said first data packet, said sink port supporting a destination targeted by said first data packet, and a total number of packets being received by said sink port not exceeding a predetermined number of packets.

57. (new) A system comprising:

a first cross-bar switch including:

a first set of input ports to receive data packets,

a first set of sink ports in communication with said first set of input ports to accept and forward said data packets, wherein a first sink port in said first set of sink ports includes:

a first communications link interface including a Retry input; and

a second cross-bar switch including:

a second set of input ports to receive data packets, wherein a first input port in said second set of input ports includes:

a second communications link interface including a first output in communication with said Retry input,

wherein said first sink port is adapted to respond to a signal on said Retry input from said first output by performing the steps of:

- aborting transmission of a first data packet;
- waiting a predetermined period of time; and
- transmitting said first data packet after waiting said predetermined period of time.

58. (new) The system of claim 57, wherein said Retry input is programmable to operate in a Hold-off mode, wherein said first sink port is adapted to respond to said signal on said Retry input when said Retry input is programmed to operate in said Hold-off mode by discontinuing transmission on said communications link interface after transmission of a data packet is complete, until said signal is altered.

59. (new) The system of claim 58, wherein said first cross-bar switch further includes a Retry Mode register, wherein a value in said Retry Mode register controls an operating mode of said Retry input.

60. (new) The system of claim 57, wherein said first cross-bar switch further includes a Retry Time register identifying said predetermined period of time.

61. (new) The system of claim 57, wherein:
said first communications link interface includes a data output, and
said second communications link includes a data input in communication with data output.

62. (new) The system of claim 57, wherein said first output in said second communications link interface is a collision output.

In the Specification:

Please replace the title of the above-identified patent application appearing at page 1, line 1 of the application with the title appearing below. A marked up copy of the amended title is shown in Appendix A to this Amendment.

CROSS-BAR SWITCH INCORPORATING A SINK PORT
WITH RETRY CAPABILITY

In the Abstract:

Please replace the ABSTRACT of the above-identified patent application appearing at page 43 of the application with the ABSTRACT appearing below. A marked up copy of the amended ABSTRACT is shown in Appendix B to this Amendment.

A cross-bar switch includes a set of input ports to accept data packets and a set of sink ports in communication with the input ports to forward the data packets. Each sink port includes a communications link interface with a Retry input. When a signal is asserted on the Retry input, the sink port aborts transmission of a data packet and waits a predetermined period of time to retransmit the data packet.

REMARKS

Applicants respectfully submit that claims 39-62 are in order for allowance and request consideration of these claims.

The Commissioner is authorized to change any underpayment or credit any overpayment to Deposit Account No. 501826 for any matter in connection with this document.

Respectfully submitted,

Date: December 21, 2001

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APPENDIX A

The title of the patent application appearing at page 1, line 1 of the application has been amended as follows:

CROSS-BAR SWITCH INCORPORATING A SINK PORT WITH RETRY CAPABILITY

APPENDIX B

The ABSTRACT of the patent application appearing at page 43 of the application has been amended as follows:

[A cross-bar switch includes a set of input ports for receiving data packets and a set of sink ports for transmitting the received packets to identified targets. A set of data rings couples the input ports to the sink ports. Each sink port utilizes the set of data rings to simultaneously accept multiple data packets targeted to the same destination — creating a non-blocking cross-bar switch. Sink ports are also each capable of supporting multiple targets — providing the cross-bar switch with implicit multicast capability.]

A cross-bar switch includes a set of input ports to accept data packets and a set of sink ports in communication with the input ports to forward the data packets. Each sink port includes a communications link interface with a Retry input. When a signal is asserted on the Retry input, the sink port aborts transmission of a data packet and waits a predetermined period of time to retransmit the data packet.